REMARKS

This Application has been carefully reviewed in light of the Office Action mailed on July 3, 2003. Applicant respectfully requests reconsideration and favorable action in this case.

Interview Summary

Applicant notes with appreciation the telephone conference with Supervisory Examiner Olik Chaudhuri on May 27, 2003, in which the Supervisory Examiner agreed to issue a new final Office Action to address a limitation of Claim 18 that was not addressed in the previous Office Actions. It is noted that the "Interview Summary" issued by the Examiner that summarizes the telephone conference incorrectly identifies a "Charles Sun" as Applicant's representative who conducted the telephone conference. Instead, the Interview Summary should identify "Brad Williams" as Applicant's representative who conducted the telephone conference with Supervisory Examiner Chaudhuri on May 27, 2003.

Section 103 Rejections

The Examiner rejects Claims 1-4, 5, 7-11, 12, 13-20, 21, and 22-28 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,350,484 issued to Gardner, et al. ("*Gardner*") in view of U.S. Patent No. 5,736,002 issued to Allen, et al. ("*Allen*"). Applicant respectfully traverses these rejections for reasons provided below.

Claim 18 is allowable because a combination of the cited references does not show "exposing the electronic device to a plasma and **at least one other gas selected from the group of inert gases and nitrogen**, the plasma converting an unmasked portion of the conductive layer into a compound and **the at least one other gas enhancing the conversion into the compound** . . . ." [emphasis added] as recited by Claim 18. Supervisory Examiner Chaudhuri had agreed to issue a new Office Action to address this missing limitation of Claim 18 because the previous Office Actions have failed to do so. However, the new Office Action issued by the Examiner in response to this agreement **continues to makes no mention of this missing limitation**. Instead, the newly-issued Office Action addresses the rejection of dependent Claims 23-26, which was not even mentioned during the telephone conference (see the "Interview Summary" of the Office Action where Claim 18 is clearly

indicated as the subject matter of the telephone conference). Further, Claims 23-26 modify the scope of the "plasma" of Claim 18, and not the "at least one other gas" that is used in conjunction with the "plasma." Because the Examiner once again remains completely silent regarding this missing limitation, even after his Supervisory Examiner has agreed that this missing limitation was not addressed in the previous Office Action, it is incontrovertible that the Examiner failed to make a prima facie showing that supports his rejection of Claim 18 and Claim 18 is allowable.

In the spirit of cooperation with the PTO and to advance the prosecution of this case, Applicant also addresses the argument that Supervisory Examiner Chaudhuri agreed to include in the newly-issued Office Action but did not. During the telephone conference on May 27, Supervisory Examiner Chaudhuri stated that this missing limitation of Claim 18 is shown by the ions listed in Tables II-VI of *Gardner* because the listed ions may be used as the ". . . at least one other gas [that enhances the conversion of an unmasked portion of the conductive layer into a compound]." However, as described below, this argument is not supported by the teachings of *Gardner*.

In fact, *Gardner* describes the ions listed in Tables II-VI as means for creating plasma, but does not teach using one or more of these ions to enhance the formation of a compound. For example, column 7, lines 8-17 of *Gardner* describes forming plasma by introducing oxygen gas (ion) into a pressure controlled system, which is then used in conjunction with a metal to form a particular compound. Then in column 8, lines 28-36, *Gardner* introduces Tables II-VI as lists of other examples of ions (plasma) that may be used in conjunction with particular types of metal to form particular compounds. Although *Gardner* teaches creating plasma using the listed ions, *Gardner* does not teach or suggest using any of the listed ions in conjunction with **an existing plasma** to **enhance the formation of compound**. Further, no portion of *Gardner* or *Allen* would motivate a skilled artisan to modify the teachings of *Gardner* to use these listed ions as "at least one other gas . . ." of Claim 18, and to date, Applicant has not received any indication from the Examiner that such a motivation is shown in some portion of the cited references or knowledge generally available to one skilled in the art, as required by the M.P.E.P. A mere list of ions, without more, cannot be said to show motivation to use these ions in a manner specifically recited by Claim 18. In fact, in some embodiments of the present invention, using "at least one other

gas . . . " in conjunction with the "plasma" of Claim 18 is advantageous because the speed of compound formation may be either increased to speed up the compound formation or decreased to better control the shape of a conductive layer. The cited references do not benefit from such an advantage or suggest that their respective teachings may be modified to benefit from such an advantage. Thus, Claim 18 is allowable. Reconsideration and favorable action are requested.

Claim 1 is allowable over a combination of *Allen* and *Gardner* because the combination does not teach or suggest "**exposing the semiconductor device to a plasma using a plasma deposition reactor**, the plasma converting the unmasked portions of the conductive layer into a compound," [emphasis added] as recited by Claim 1. The Examiner states that an ion implanter of *Gardner* is a plasma deposition reactor. But this is an inaccurate characterization of an ion implanter. As well known in the art, **an ion implanter does not expose a device directly to plasma**, and thus cannot meet the missing limitation of "exposing the semiconductor device to a plasma . . . ," as recited by Claim 1. For example, column 4, line 50 - column 5, line 33 of *Gardner*, which describes figures 3A-3D that illustrate ion implantation, does not mention the use of any plasma. (For a simpler illustration of this point, compare figure 2B of *Gardner* with figure 3B of *Gardner*. Figure 3B does not show the cloud 10 illustrating plasma. Rather, it shows arrow 12 illustrating an ion beam). Another well known and significant difference between an ion implanter and a plasma deposition reactor is that an ion implanter generally operates at a power level greater than 20,000 V, while a plasma deposition reactor generally operates at a power level less than approximately 30 V. In some embodiments of the present invention, using a plasma deposition reactor to start a reaction between plasma and a substrate to form a compound is advantageous because the lower energy range associated with the plasma deposition reactor causes less damage to the semiconductor device. The cited references do not benefit from such an advantage or suggest that their respective teachings may be modified to benefit from such an advantage. In fact, it would not be obvious for one skilled in the art to substitute an ion implanter with a plasma deposition reactor to benefit from such an advantage because, as well known in the art, a plasma deposition reactor is generally used in the industry to deposit a layer of material over a substrate and not for starting a reaction with a substrate to form a compound over the substrate. Thus, the Examiner's argument that an ion implanter of

Gardner shows a plasma deposition reactor of Claim 1 is incorrect and Claim 1 is allowable. Reconsideration and favorable action are requested.

Claim 11 is allowable over the cited references for reasons analogous to those provided in conjunction with Claims 18 and 1. Specifically, the cited references do not disclose "exposing the electronic device to a plasma using a plasma deposition reactor and at least one other gas selected from the group of inert gases and nitrogen, the plasma converting the unmasked portions of the conductive layer into a compound and the at least one other gas enhancing the conversion into the compound . . . ." as recited by Claim 11. Reconsideration and favorable actions are requested.

As depending from allowable independent Claims 1, 11, and 18, the respective dependent Claims 2-10, 12-17, and 19-30 are also allowable. Reconsideration and favorable action are requested.

Section 102 Rejections

The Examiner rejects Claims 31 and 32 under 35 U.S.C. § 102(b) as being anticipated by *Allen*. Applicant respectfully traverses the rejections for reasons provided below.

Claim 31 is allowable because *Allen* does not show "exposing, by a plasma deposition reactor, the device to a plasma, the plasma converting the unmasked portion of the conductive layer into a compound . . . ." as recited by Claim 31. As he did in the previous, non-final Office Action, the Examiner identifies a plasma metal etcher described in column 9, line 28 of *Allen* as showing a plasma deposition reactor of Claim 31. This is wrong. It is a well-understood notion in the field of art that a plasma etcher and a plasma deposition reactor are two different devices designed to perform completely opposite functions. As explained before in a previous Response and suggested by the respective names of the devices, a plasma etcher is used to etch away or ***remove*** a layer and a plasma deposition reactor is generally used to ***deposit*** a layer. Also, whereas a plasma deposition reactor operates in an energy range of "few volts" (approximately 30 volts or less), a plasma etcher operates in an energy range of "few ten volts" (approximately 50 to 100 volts). As explained above in conjunction with Claim 1, the lower power level of a plasma deposition reactor reduces the probability of damage to the semiconductor device. Further, in light of these well known differences between the two devices and the fact that a plasma deposition reactor is generally used in the

industry to deposit a layer and not to start a reaction between plasma and a substrate, one skilled in the art would not consider it obvious to modify the teachings of *Allen* by substituting a plasma deposition reactor with a plasma etcher for compound formation. Therefore, Claim 31 is allowable. Reconsideration and favorable action are requested.

Claim 32 is allowable over *Allen* because *Allen* does not teach or suggest "exposing the device to a plasma having an energy level of approximately 30 volts or below, the plasma converting the unmasked portion of the conductive layer into a compound. . .." as recited by Claim 32. Neither *Gardner* nor *Allen* shows this missing limitation, and the Examiner does not assert that the cited references show this limitation. **In fact, the Examiner's rejection of Claim 32 in this Office Action is identical to the previous rejection of the unamended version of Claim 32, which did not include this missing limitation.** Thus, there is no question that the present Office Action does not address this missing limitation. Absent any indication that this missing limitation is shown in some reference, Claim 32 is allowable. Reconsideration and favorable action are requested.

CONCLUSION

Applicant has now made an earnest attempt to place this case in condition for immediate allowance. For the foregoing reasons and for other apparent reasons, Applicant respectfully requests full allowance of all pending claims.

If Examiner believes that prosecution of this Application would be advanced by discussing the Application with Applicant's representative, a telephone call to the undersigned is strongly encouraged.

No additional fee is believed to be due. However, the Commissioner is hereby authorized to charge any fee or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicant

Bradley P. Williams
Reg. No. 40,227

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Correspondence Address:

_X_ Customer Number: **05073**